

What is claimed is:

1. A mobile terminal device that has a database storing a first information list, a second information list and a third information list, comprising:

5 a scene generation unit operable to generate a 3D object on which the first information list is associated with a direction of a first axis, the second information list is associated with a direction of a second axis, and the third information list is associated with a direction of a third axis, the first to third axes being in a 3D xyz
10 space, the second information list relating to the first information list, and the third information list relating to either the first information list or the second information list; and

a display unit operable to display the generated 3D object on a screen of the mobile terminal device.

15 2. The mobile terminal device according to Claim 1, further comprising:

a viewpoint moving unit operable to move a viewpoint freely according to an input from a user of the mobile terminal device; and

20 an image generation unit operable to generate an image of the 3D object generated by the scene generation unit, the image being viewed from the moved viewpoint,

wherein the display unit displays the 3D object on the screen of the mobile terminal device according to the image generated by
25 the image generation unit.

3. The mobile terminal device according to Claim 1,
wherein the first information list is a personal information list,
and

30 the second information list and the third information list are related information lists that relate to said personal information list.

4. The mobile terminal device according to Claim 3,
wherein the related information lists include a group
information list and a history information list.

5 5. The mobile terminal device according to Claim 4,
wherein the personal information list includes personal
information which is any one of a personal name, an e-mail address,
a telephone number, and an address,
the group information list includes any one of group
10 information which is definable by the user of the mobile terminal
device and group information which is stored in advance, and
the history information list includes history information which
is any one of information about sending of a mail, receiving of a mail,
a picture, a schedule, making of a telephone call, and receiving of a
15 telephone call.

6. The mobile terminal device according to Claim 1,
wherein the first information list, the second information list,
and the third information list are texture-mapped on the 3D object
20 in the first axis direction, the second axis direction, and the third
axis direction, respectively.

7. The mobile terminal device according to Claim 1, further
comprising:

25 a texture generation unit operable to generate 2D texture
images showing items listed on each of the lists stored in the
database;

a model generation unit operable to generate polygon models
having 2D or 3D space coordinates; and

30 an object generation unit operable to generate small objects
by mapping each of the generated texture images on a surface of or
inside each of the polygon models,

wherein the scene generation unit generates the 3D object by laying said small objects on one another in the 3D xyz space.

8. The mobile terminal device according to Claim 7, further comprising a cursor key input unit operable to move a position of a cursor displayed on the screen to a position required by the user, according to an instruction from said user; and

a decision key input unit operable to decide one of the small objects on which the cursor is placed,

wherein the display unit displays, on the screen, an enlarged view of the texture image mapped on the surface of or inside the small object decided by the decision key input unit.

9. The mobile terminal device according to Claim 8,

wherein the object generation unit generates a history information caption object by mapping, on the surface of one of the 2D polygon models, one of the texture images that shows a detail of history information, and

the display unit displays said history information caption object on the screen as a balloon, the history information caption object corresponding to the small object pointed by the cursor.

10. The mobile terminal device according to Claim 7,

wherein each of the small objects is one of the following objects:

(a) a personal information object generated by mapping, on one of the polygon models, one of the texture images that shows a personal name listed on a personal information list that is one of the lists stored in the database;

(b) a group information object generated by mapping, on one of the polygon models, one of the texture images that shows a group name listed on a group information list that is one of the lists stored

in the database;

(c) a history information object generated by mapping, on one of the polygon models, one of the texture images that is represented by a different color depending on an item listed on a history information list that is one of the lists stored in the database; and

(d) a personal information element object generated by mapping, on one of the polygon models, one of the texture images that shows personal information listed on the personal information list that is one of the lists stored in the database.

11. The mobile terminal device according to one of Claims 1 and 2, further comprising a mode selection unit operable to select one of a plurality of display modes for displaying an image of the 3D object viewed from the viewpoint in the 3D xyz space,

wherein the display unit displays the 3D object on the screen according to the display mode which the mode selection unit selects based on an instruction from the user, and

the display modes include at least one of the following display modes: normal display mode for displaying a front view of the 3D object; oblique display mode for displaying an oblique view of the 3D object; and immersive information display mode for displaying an internal view of the 3D object.

12. The mobile terminal device according to Claim 11,

wherein the scene generation unit generates an immersive information display object that shows, on the screen, an internal view of a history information object which shows history information and to which a texture image is mapped inside, when the mode selection unit selects the immersive information display mode, and

the display unit displays said immersive information display object on the screen.

13. The mobile terminal device according to Claim 12,
wherein the viewpoint moving unit performs processing for
moving to an internal view of another history information object
5 adjacent to the history information object displayed on the screen,
by seamlessly moving the viewpoint in the directions of the three
axes according to an input from the user of the mobile terminal
device, and

the display unit displays, on the screen, the immersive
10 information display object that is generated by the scene generation
unit after said processing.

14. The mobile terminal device according to Claim 11,
wherein the scene generation unit generates a normal display
15 object on which a group information object showing group
information is placed in the first axis direction and a personal
information object showing a personal name that belongs to said
group information object is placed in the second axis direction, when
the mode selection unit selects the normal display mode, the normal
20 display object showing the front view of the 3D object, and
the display unit displays said normal display object on the
screen.

15. The mobile terminal device according to Claim 11,
25 wherein the scene generation unit generates the 3D object on
which the following objects are texture-mapped in the
corresponding directions, when the mode selection unit selects the
oblique display mode: a group information object that shows group
information and is texture-mapped in the first axis direction; a
30 personal information object that shows a personal name belonging
to said group information object and is texture-mapped in the
second axis direction; a history information object that shows

history information and a personal information element object that shows personal information, the history information object and the personal information element object relating to said personal information object and being texture-mapped in the third axis direction,

the viewpoint moving unit performs processing for moving the viewpoint freely according to an input from the user of the mobile terminal device,

the image generation unit generates an image of the oblique view of the generated 3D object, the image being viewed from the moved viewpoint, and

the display unit displays the 3D object on the screen of the mobile terminal device according to the image generated by the image generation unit.

16. The mobile terminal device according to Claim 11, further comprising a mode change unit operable to change a display mode shown on the screen of the mobile terminal device to another display mode, according to the movement made by the viewpoint moving unit,

wherein the display unit displays the 3D object on the screen according to the change made by the mode change unit.

17. An image display method of displaying an image on a screen of a mobile terminal device that has a database storing a first information list, a second information list, and a third information list, the image display method comprising:

a scene generation step of generating a 3D object on which the first information list is associated with a direction of a first axis, the second information list is associated with a direction of a second axis, and the third information list is associated with a direction of a third axis, the first to third axes being in a 3D xyz space, the second

information list relating to the first information list, and the third information list relating to either the first information list or the second information list; and

5 a display step of displaying the generated 3D object on the screen of the mobile terminal device.

18. The image display method according to Claim 17, further comprising:

10 a viewpoint moving step of moving a viewpoint freely according to an input from a user of the mobile terminal device; and

an image generation step of generating an image of the 3D object generated in the scene generation step, the image being viewed from the moved viewpoint,

15 wherein, in the display step, the 3D object is displayed on the screen of the mobile terminal device according to the image generated in the image generation step.

19. The image display method according to Claim 17, further comprising:

20 a texture generation step of generating 2D texture images showing items listed on each of the lists stored in the database;

a model generation step of generating polygon models having 2D or 3D space coordinates; and

25 an object generation step of generating small objects by mapping each of the generated texture images on a surface of or inside each of the polygon models,

wherein, in the scene generation step, the 3D object is generated by laying said small objects on one another in the 3D xyz space.

30

20. The image display method according to Claim 17, further comprising a mode selection step of selecting one of a plurality of

display modes for displaying the image of the 3D object viewed from the viewpoint in the 3D xyz space,

wherein, in the display step, the 3D object is displayed on the screen according to the display mode selected in the mode selection step based on an instruction from the user, and

the display modes include at least one of the following display modes: normal display mode for displaying a front view of the 3D object; oblique display mode for displaying an oblique view of the 3D object; and immersive information display mode for displaying an internal view of the 3D object.

21. A program for a mobile terminal device that has a database storing a first information list, a second information list, and a third information list, the program comprising following steps:

a scene generation step of generating a 3D object on which the first information list is associated with a direction of a first axis, the second information list is associated with a direction of a second axis, and the third information list is associated with a direction of a third axis, the first to third axes being in a 3D xyz space, the second information list relating to the first information list, and the third information list relating to either the first information list or the second information list; and

a display step of displaying the generated 3D object on the screen of the mobile terminal device.

22. The program according to Claim 21, further comprising:

a viewpoint moving step of moving a viewpoint freely according to an input from a user of the mobile terminal device; and

an image generation step of generating an image of the 3D object generated in the scene generation step, the image being viewed from the moved viewpoint,

wherein, in the display step, the 3D object is displayed on the

screen of the mobile terminal device according to the image generated in the image generation step.

23. The program according to Claim 21, further comprising:

5 a texture generation step of generating 2D texture images showing items listed on each of the lists stored in the database;

a model generation step of generating polygon models having 2D or 3D space coordinates; and

10 an object generation step of generating small objects by mapping each of the generated texture images on a surface of or inside each of the polygon models,

wherein, in the scene generation step, the 3D object is generated by laying said small objects on one another in the 3D xyz space.

15 24. The program according to Claim 21, further comprising a mode selection step of selecting one of a plurality of display modes for displaying the image of the 3D object viewed from the viewpoint in the 3D xyz space,

20 wherein, in the display step, the 3D object is displayed on the screen according to the display mode selected in the mode selection step based on an instruction from the user, and

the display modes include at least one of the following display modes: normal display mode for displaying a front view of the 3D
25 object; oblique display mode for displaying an oblique view of the 3D object; and immersive information display mode for displaying an internal view of the 3D object.